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09/669,517	09/25/2000	Siu-Wai Wu	GIC-614	3858

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EXAMINER	
SEFCHECK, GREGORY B	

ART UNIT	PAPER NUMBER
2662	9

DATE MAILED: 03/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/669,517	WU ET AL.	
	Examiner	Art Unit	
	Gregory B Sefcheck	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 8.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment, filed 3/4/04, is acknowledged.
- Claim 2 has been cancelled. Claims 40 and 41 have been added.
- Claims 1 and 3-41 are now pending.

Information Disclosure Statement

1. The information disclosure statement filed 3/4/2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Examiner's note: This IDS is a duplicate of the IDS filed on 1/12/04, in which none of the copies of the noted references were received. In IDS 3/4/04, copies of all the references were received, except for EP 0 851 656.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3, 9-12, 16-18, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang et al. (US006570888B1), hereafter Huang.

- In regards to Claim 1 and 9,

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing encoded video frames (Col. 7, lines 51-54; Col. 18, lines 15-20).

Referring to Fig. 4, the method and multiplexer includes an input 402/403 for receiving (recovering) a plurality of channels containing encoded video data (Col. 1, lines 58-60; claim 1/9 – means to recover video frames from channels).

Referring to Fig. 5, Huang discloses storing the video data in a Statistical Multiplexer Buffer (SMB) 507 (lookahead buffer) for delaying the coding of the video data (Col. 9-10, lines 21-53; claim 1 – delaying by storing video in lookahead buffer to delay transcoding).

Fig. 5 further shows the video data input coupled to TC 407 and buffered (delayed) in SMB 507 while Bit Stream Analyzer 409 obtains timing and picture size (statistical) information for the data (Col. 8, lines 28-31; Col. 9, lines 21-23; claim 1/9 – means to delay transcoding of video to obtain statistical information).

VBV model 415 uses the information obtained by Analyzer 409 to determine the bit rate (parameter) at which bit streams are to be output (Col. 8, lines 15-18; claim 1/9 – means for determining bit rate need parameters from statistical information).

The actual output rate for the bit stream is determined by TRC 413, which encodes (transcodes) the data based on the parameters of VBV model 415 (Col. 8, lines 5-15; claim 1/9 – means for transcoding video in accordance with bit rate need parameters).

- In regards to Claim 3,

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing encoded video frames according to the parent claim above.

Referring to Fig. 4, Huang discloses storing the bit rate parameters determined by VBV model 415 in DTS buffer 414 (storage device; Col. 8, lines 52-58; claim 3 – storing bit rate parameter in storage device) until the time when the data is coded (claim 3 - recovering parameter from storage device for use in transcoding).

- In regards to Claim 10-12, 17 and 26,

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing encoded video frames (Col. 7, lines 51-54; Col. 18, lines 15-20).

Referring to Fig. 4 and 5, TRC 413 uses information from SMB 507 to vary (update) the range of bit rates for each time slice (interval) that it provides PDC 419 (Col. 9, lines 41-57; claim 10/26 – means for updating transcoding bit rate a plurality of times at successive intervals as transcoding progresses).

While updating the bit rates, TRC 413 sets minimum and maximum levels which bound the updated bit rates for each time slice (interval; Col. 9, 58-64; claim 10/26 – means for bounding the updated transcoding bit rates by one of min/max levels that are also updated in each of the intervals; claim 12 – updated transcoding bit rates are bounded by both max and min levels that are updated in each of the successive intervals)

TRC 413 delivers the bounded and updated bit rates to PDC 419 through Throttle 519. PDC 419 then allocates the coded packets to be output for each time slice through Switch 511, which delays the allocation in accordance with the Throttle 519 (transcoding engine) and information 418 (Col. 9, lines 53-67; claim 10/26 – means for allocating the bounded and updated bit rates for transcoding corresponding portions of video in the intervals; claim 17 – delaying the updated and bounded transcoding bit rates according to a delay associated with a transcoding engine; claim 17 – allocating transmission bit rates in accordance with the updated and bounded transcoding bit rates after the delaying).

Huang shows VBV model 415 can use the timing information and picture size of the incoming bit stream to determine a (target) rate of output for the bit stream (Col. 8-9, lines 67-3; claim 10/26 – computing target size that indicates amount of data expected from transcoding).

Huang further discloses the bounding and updating of coding rates for time slices, or intervals made up of a collection of multiplexed time slots. The slots are allocated to the plurality of channels periodically, making the time slice intervals periodic as well (Fig. 2; Col. 3-4, lines 55-14; claim 11 – successive intervals are periodic).

- In regards to Claim 16 and 18,

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing encoded video frames according to the parent claim above.

Referring to Fig. 4, Huang shows the output 421 of PDC 419 comprises multiple bit streams (groups) 417(0)-(i). Huang further shows MOD 423 configures the output comprised of the groups to be output over portions of the total bandwidth of the transmission medium 207 (Col. 7, lines 56-59; claim 16 – stat remux outputs stream comprising plurality of remux groups; claim 16 – portions of total bandwidth used to configure groups; claim 18 – providing packets of a video frame after transcoding to a mux for muxing with packets of at least one other channel in accordance with allocated transmission rates).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4-8, 13-15, 19-25, and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Zhang et al. (US006483543B1), hereafter Zhang.

- In regards to Claim 4-8,

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing encoded video frames according to the parent claim above. Huang shows that the statistical information used in determining the bit rate need parameter may comprise of a number of bits (Col. 8, lines 48-50; claim 5 – statistical information comprises a number of bits), or the average bit rate (Col. 13, lines 48-60; claim 6 – statistical information comprises an average bit rate).

Huang does not show the statistical information used for determining the respective bit rate need parameter comprising an average quantizer scale value (claim 4), a number of bits in macroblocks (claim 7), or a macroblock resolution (claim 8).

Zhang discloses a system and method for transcoding multiple channels of compressed video streams in a statistical remultiplexer (Abstract). Zhang shows the use of quantization (average quantizer values) to reduce the number of levels required to represent a given sample of video data (claim 4 – statistical information comprises an average quantizer scale value). Zhang also shows partitioning the video data into autonomous frames containing multiple macroblocks, before being transcoded (Col. 7, lines 1-5; Col. 9, lines 12-20). A macroblock header, which contains information such as the number of bits in a macroblock and the number of macroblocks in a frame (macroblock resolution), is used to determined the bit rate parameter for transcoding (claim 7 – statistical information comprises a number of bits in macroblocks; claim 8 – statistical information comprises a macroblock resolution).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Huang by using statistical information comprised of quantizer scale values, bits/macroblock, macroblocks/frame, or any other information indicative of the pre-transcoded bit steam so that a reduced output bit budget per video frame can be ensured.

- In regards to Claim 13-15, 19, 24, 40, and 41,

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing encoded video frames. With respect to claim 13, all limitations of parent claim 10 are covered above.

Referring to Fig. 4 and 5, TRC 413 uses information from SMB 507 to vary (update) the range of bit rates for each time slice (interval) that it provides PDC 419 (Col. 9, lines 41-57; claim 14/24/40/41 – means for updating transcoding bit rate a plurality of times at successive intervals as transcoding progresses).

While updating the bit rates, TRC 413 sets minimum and maximum levels which bound the updated bit rates for each time slice (interval; Col. 9, 58-64; claim 14/24/40/41 – means for bounding the updated transcoding bit rates by one of min/max levels that are also updated in each of the intervals; claim 12/14/40 – updated transcoding bit rates are bounded by both max and min levels that are updated in each of the successive intervals)

TRC 413 delivers the bounded and updated bit rates to PDC 419 through Throttle 519. PDC 419 then allocates the coded packets to be output for each time slice through Switch 511, which delays the allocation in accordance with the Throttle 519 (transcoding engine) and information 418 (Col. 9, lines 53-67; claim 14/24/40/41 – means for allocating the bounded and updated bit rates for transcoding corresponding portions of video in the intervals).

Huang shows VBV model 415 can use the timing information and picture size of the incoming bit stream to determine a (target) rate of output for the bit stream (Col. 8-9, lines 67-3; claim 14/19/24/40/41 – computing target size that indicates amount of data expected from transcoding).

Referring to Fig. 10, Huang shows that clock information (reference), present in the original bit stream's timing information, is modified by MOD 1005 and 1016 to

compensate for the time spent in the coding process (Col. 10, lines 61-65; Col. 11, lines 10-13). This clock information is used by VBV model 415 to compute the target size (Col. 8, lines 52-56).

Huang does not expressly show bypassing transcoding when the computed target size is within a pre-determined difference of, the number of pre-transcoding bits. Huang also does not show allocating and adjusting bandwidth in accordance with bypassed data. Furthermore, Huang does not show estimating a time for inserting clock reference data according to the target size.

Because Huang shows clock information already present in the data, it would be simpler and less costly to modify the existing clock data according to the expected target size of coded data rather than insert newly created clock data (claim 24 – estimating a time for inserting clock reference data into transcoded data according to target size).

Zhang discloses a system and method for transcoding multiple channels of compressed video streams in a statistical remultiplexer (Abstract). Zhang shows computing a target bit budget for each video stream (Col. 8, lines 28-30). Zhang further shows that the transcoding process for a particular bit stream may be bypassed if the multiplexing output is capable of handling the signal without any further recoding. Zhang further shows that the goal of the transcoding process is to optimize the number of bits required to represent a given digitized video sample (Col. 2, lines18-22). Therefore, it

would be beneficial to variably bypass the transcoding of data if the expected transcoding results do not achieve any further optimization of the output bandwidth needed to represent the video data (claim 13/14/40 – bypass transcoding when target size is within a pre-determined difference of the number of pre-transcoding bits; claim 15 – allocating a variable amount of bandwidth for pass-through data), thus adjusting the amount of bandwidth needed for transcoded data; claim 15 – adjusting amount of bandwidth for transcoding in accordance with allocating step; claim 19/24/41 – transcoding bit rate is determined in accordance with target size).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Huang by computing a target size expected to result from transcoding of data, as taught by Zhang. This target size could then be used to determine whether transcoding of data would help to optimize the output bandwidth required to represent the multiplexed video data. If not, bandwidth is allocated for data that can bypass transcoding, as taught by Zhang, thus decreasing the processing need and the bandwidth needed for transcoded data while ensuring optimized output utilization.

It would also have been an obvious design choice by one of ordinary skill in the art at the time of the invention to modify existing clock reference data for coded video data based on the expected target rate of the coded data rather than insert new clock reference data at an estimated time. The clock data could be used throughout the coding process to synchronize the various processes. Modifying the existing data when

required would also require less processing than inserting the clock data at an estimated time.

- In regards to Claim 20-22 and 25,

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing video frames according to the parent claim above. Huang further shows that target rate determined by VBV model 415 must be bounded for each time slice (claim 20/25 – target size is bounded by at least one of min/max value updated in successive intervals) so that the SMB 507 does not overflow or underflow (Col. 9, lines 34-42; claim 22 – at least one of min/max value is determined so as to protect an associated decoder buffer from underflow or overflow).

Such boundaries are determined in accordance with information provided by Meter 507, which monitors the fullness of SMB 507 (Col. 9, lines 42-50; claim 21 – at least one of min/max value is determined in accordance with current fullness of associated transcoding engine buffer).

- In regards to Claim 23,

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing video frames according to the parent claim above.

Huang further shows a time for transmitting coded data by Throttle 519 is set (estimated) by TRC 413 based on the target size determined by VBV model 415 (Col. 9, lines 53-64; claim 23 – estimating a time for transmitting transcoded data according to the target size).

6. Claims 27-34 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Balakrishnan (US005566208A).

- In regards to Claim 27, 32 and 39,

Zhang discloses a system and method for transcoding multiple channels of compressed video streams in a statistical remultiplexer (Abstract). Zhang shows partitioning the video data into autonomous frames containing multiple macroblocks, before being transcoded (Col. 7, lines 1-5; Col. 9, lines 18-20).

The autonomous frame header extracts information regarding the recoding process, including target bit usage from the data (Col. 8, lines 25-30; claim 27/39 – means for computing a target amount of data expected from transcoding).

Referring to Fig. 4, Zhang further discloses re-quantization of a portions (first and second portions) of data, utilizing the information (old quantization) contained in the macroblock header of the AFH, by the autonomous frame recoder 408 before transcoding the macroblocks of video data, which includes the original target bit usage

and the desired bit budget updated at auxiliary information updating unit 306 (Col. 8, lines 36, Col. 10, lines 65-67)

Zhang does not expressly show the use of a ratio of the pre-transcoding amount and target amount in determining the new quantization scales.

Balakrishnan discloses a method of automatically varying the size of an encoder buffer with the channel bit-rate. Balakrishnan discloses using a compression ratio of input bits (pre-transcoding amount) to output bits (target amount) that varies with the content of digital information being compressed (Col. 1, lines 58-65; claims 27/39 and 32 – means for determining new quantization scales for transcoding corresponding macroblocks in a first and second portion of video in accordance with the old quantization scales and a ratio of a pre-transcoding amount of data in the video frame to the target amount of data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a ratio of a pre-transcoding data amount to a target output amount as taught Balakrishnan, when transcoding video data using the method of Zhang. This would enable efficient transcoding of variable rate data in accordance with the content of the specific digital information being transcoded.

- In regards to Claim 28,

Zhang v. Balakrishnan discloses a method for transcoding multiple channels of compressed video streams in a statistical remultiplexer according to the parent claim above.

Zhang does not expressly show rounding the new quantizer scales to an integer value.

Wang discloses a statistical multiplexer which determines a target number of bits for each coded frame based on adjusted a quantization parameter (new quantizer scales; Col. 5, lines 5-8), which must be equal to an integer value (claim 28 – rounding new quantizer scales to an integer value) in order to simplify the updating of the paramether and to compute a length of a super frame structure defined by Wang's invention (Col. 6, 25-55).

It would have been an obvious design choice to one of ordinary skill in the art to modify the method of Zhang by explicitly rounding the quantization scales for each coded frame to an integer value. Maintaining the quantization as an integer value would simplify the computation of new quantization scales and reduce the amount of processing required as coding progresses.

- In regards to Claim 29,

Zhang discloses a method for transcoding multiple channels of compressed video streams in a statistical remultiplexer according to the parent claim above.

Referring to Table 1 (Col. 7-8, lines 60-7), Zhang discloses the data payload (portion) comprises slices of the video frame (claim 29 – portions comprise slices of a particular video frame).

- In regards to Claim 30 and 31,

Zhang discloses a method for transcoding multiple channels of compressed video streams in a statistical remultiplexer according to the parent claim above. Zhang further discloses a re-quantization method for transcoding macroblocks of data (Col. 8, line 36). Each macroblock requires a minimum number of bits for transcoding in order to achieve a desired level of granularity (Col. 9, lines 20-45; claim 31 – new quantizer scales are adjusted, if necessary, to ensure that the corresponding macroblocks receive a minimum number of bits for transcoding).

Zhang does not expressly show the quantizer scales adjusted to be no finer than the corresponding old quantizer scales.

Balakrishnan discloses a method of automatically varying the size of an encoder buffer with the channel bit-rate. Balakrishnan discloses that the lower the quantization of a given video frame, the higher the number of bits representing that video frame (Col. 6, lines 1-5). Therefore, to ensure the number of transcoded bits is less than the number of pre-transcoded bits, adjustments to the quantization scales should be no finer than the old quantization scales (claim 30 – new quantizer scales are adjusted, if necessary, to be no finer than the corresponding old quantizer scales).

It would have been an obvious design choice to one of ordinary skill in the art to modify the method of Zhang by adjusting new quantizer scales to be no finer than the old quantizer scales, thus ensuring that the number of bits representing the video data is reduced while maintaining the minimum number of bits needed for transcoding each macroblock.

- In regards to Claim 33 and 34,

Zhang discloses a method for transcoding multiple channels of compressed video streams in a statistical remultiplexer according to the parent claim above.

Zhang discloses partitioning the total bit stream into autonomous frames (portions; Col. 7, lines 1-10). For each frame, the length of the frame (pre-transcoding amount) and a target bit usage is determined using the total pre-transcoding amount (Col. 8, lines 26-30). Therefore, a target bit usage for the total bit stream would comprise each frame's target size.

The current target size and pre-transcoding amount for the total bit stream as transcoding progresses is determined by decrementing the total target amount/pre-transcoding amount by the target usage/pre-transcoding amount of each frame that has already been transcoded (claim 33 – target size of transcoded data is determined by decrementing target amount of data expected from transcoding by amount of data generated in transcoding of first portion; claim 34 – pre-transcoding amount is

determined by decrementing the pre-transcoding amount by a pre-transcoding amount in the first portion).

- In regards to Claim 37 and 38,

Zhang discloses a system and method for transcoding multiple channels of compressed video streams in a statistical remultiplexer according to the parent claim above.

Zhang discloses partitioning data into autonomous frames, defined as groups of macroblocks, before transcoding. Zhang further discloses transcoding through a process of re-quantization, where each macroblock or group of macroblocks defines its associated information, such as its old quantization, in a macroblock header of the AFH (Fig. 5; Col. 9, lines 5-24; claim 37/38 – each macroblock or group of macroblocks has its own associated old quantization scale).

7. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Balakrishnan in further view of Huang.

- In regards to Claim 35 and 36,

Zhang in view of Balakrishnan discloses a method for transcoding multiple channels of compressed video streams in a statistical remultiplexer according to the parent claim above.

Zhang in view of Balakrishnan does expressly show maintaining a running count of an amount of data used in transcoding the portions.

Huang discloses a method for processing data in a statistical multiplexer receiving a plurality of channels containing video frames. Huang shows Meter 505 monitoring the fullness (maintain a count) of SMB 507 so as not to overflow (exceed a max level) the buffer (Col. 9, lines 42-50; claim 35 – maintaining a running count of an amount of data used in transcoding the portions). The feedback from Meter 505 is used to adjust encoding rates to keep the buffer from overflowing (exceeding the max level).

Because of the feedback from Meter 505, SMB 507 is kept from overflowing (reaching a max level), thus eliminating the need for setting a panic scale until a minimum number of bits available for transcoding (claim 35 – if the count exceeds a max level, a panic quantization scale is set until there are enough bits left for the macroblocks to receive a minimum number of bits for transcoding). Also, because the size of the SMB 507 is fixed, the overflow threshold (max level) does not need to be adjusted (claim 36 – max level is adjusted downwards after transcoding of each portion).

It would have been an obvious design choice to one of ordinary skill in the art at the time of the invention to implement feedback of a running count and adjust quantization scales accordingly, as shown by Huang, thus eliminating the need for a

panic scale that is set until there are a minimum number of bits available for transcoding.

Response to Arguments

8. Applicant's arguments filed 3/4/04 have been fully considered but they are not persuasive.

- On pg. 18, the Applicant contends that Huang discloses techniques for statistical multiplexing and not statistical remultiplexing. Further more, on pg. 24, regarding claims 24 and 41, the Applicant contends that it would not have been obvious to estimate the time for inserting the clock reference data into the output transcoded data because Huang discloses encoding raw video data and not transcoding of encoded video data.

It is the examiner's opinion that the techniques disclosed by Huang could be applied to previously encoded and multiplexed data that had not been originally processed with the efficiency shown by Huang. By applying Huang, a re-coded (transcoded) and re-multiplexing of data through statistical analysis that would better utilize the bandwidth of the system.

- On pgs. 19-22, regarding claims 1 and 9, the Applicant contends that the buffer of Huang does not constitute a "lookahead" buffer that stores video frames while statistical information is obtained. The Applicant further contends that the buffer 507 and meter 505 only provides feedback to encoder 107 and does not function prior to transcoding.

It is the examiner's opinion that buffer 507 does hold or store data while statistical information is obtained in Analzyer 409 prior to recoding the data at an optimized bandwidth by TRC 413. Though it is shown that meter 505 may possibly "feed back" information to encoder 107, it is primarily shown to provide information to TRC 413 for controlling the rate of subsequent coding of the data.

- On pg. 21-22, regarding claims 10 and 26, the Applicant contends that Huang does not disclose computing a target frame size indicating data that is expected to result from transcoding.

It is the examiner's opinion that VBV model 415 estimates the characteristics of bit streams that will be output and received after being coded and transmitted from switch 511 at decoders 119, thereby provided expected results before transmission to aid in configuring the coded transmission.

- On pg. 22-23, regarding claims 14 and 40, the Applicant contends that bypassing transcoding of input frames that are "within a predetermined difference" to the target size include those input frames that are slightly larger than the target frame.

It is the Examiner's opinion that Zhang discloses bypassing of transcoding of input frames "within a predetermined difference" to the target size by passing over those frames that would not benefit in a bandwidth reduction by transcoding. In Zhang, transcoding progresses if the target frame is less than (within a predetermined distance) that of the input.

- On pg. 25, regarding claims 27 and 39, the Applicant contends that Balakrishnan does not disclose how to use the compression ratio to control the quantizer scale and that the "compression ratio does not automatically imply the ratio of the quantizer scales."

It is the Examiner's opinion that quantization is a common reference used in the art for encoding/compressing data and that Balakrishnan shows how a ratio of the number of bits produced through encoding/quantization to the number of bits

prior to encoding/quantization could be beneficial to optimization an encoding/quantization process.

9. Applicant's arguments with respect to claim 28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B Sefcheck whose telephone number is 703-305-0633. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

GBS
3-23-2004

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600